IN THE CLAIMS:

Please cancel all of the claims presently in the application and substitute new claims 21 - 46 as follows:

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21. **(new)** Semiconducting gas sensor comprising:

a gas-sensitive layer whose electrical conductivity can be varied by contact with a gas;

a heater for heating the layer to a predefined measuring temperature;

contact electrodes for measuring the electrical resistance or the conductivity of the gas-sensitive layer; and

a chamber in which the gas-sensitive layer is arranged; wherein,

a valve arrangement is provided to seal the chamber from the outside and keep it closed during the measurement process, whereby during measurement a limited supply of individual gases in the chamber is at least partially converted; and

volume of the chamber is such that at least one component of a limited gas store within the chamber is substantially exhausted via conversion within a predetermined measuring interval.

22. **(new)** The semiconducting gas sensor in accordance with Claim 21, further comprising a device for regulating heating of the gas-sensitive layer in stages whereby individual components of the gas can be selectively converted at predetermined measuring temperatures.

23. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the gas sensor is produced using micromechanical technology.

24. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the heater is a platinum heating resistor which is arranged in a meandering pattern.

25. **(new)** The semiconducting gas sensor in accordance with Claim 21, further comprising a passivating layer that is positioned between the heater and the gas-sensitive layer, and is made of SiO_2.

26. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the contact electrodes are made of platinum.

27. **(new)** The semiconducting gas sensor in accordance with Claim 21, further comprising a silicon substrate as a carrier, and a nitride membrane, which separates the heater from the carrier.

28. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the gas-sensitive layer is made of a material selected from the group consisting of SnO_2, WO_3, titanium oxide, and organic materials.

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29. **(new)** The semiconducting gas sensor in accordance with Claim 28, wherein the organic materials comprise phthallocyanine.

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30. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the gas sensor is configured for measuring concentrations of CO, NO_2, NO, and/or O_3.

31. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the chamber is made of silicon.

32. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the chamber volume measures no more than 0.05 to 10 cm^3.

33. **(new)** The semiconducting gas sensor in accordance with Claim 21, wherein the chamber volume measures no more than 0.03 to 0.7 cm^3.

34. (new) The semiconducting gas sensor in accordance with Claim 21, wherein the chamber volume measures no more than 0.5 cm^3.

35. (new) A gas sensor system comprising:

a plurality of semiconducting gas sensors in accordance with Claim 21; and

lines for the inlet and outlet of gas via a valve arrangement of controllable valves.

36. (new) The gas sensor system in accordance with Claim 35, wherein the semiconducting gas sensors are arranged in a parallel connection.

37. (new) The gas sensor system in accordance with Claim 35, wherein the valves are controllable individually.

38. (new) A method of gas analysis using a semiconducting gas sensor, comprising:

providing a semiconducting gas sensor with a gas-sensitive layer;

placing said gas sensor in contact with a gas or gas mixture that is to be analyzed;

heating the gas-sensitive layer; and

analyzing a measuring signal that is a function of the electrical conductivity of the gas-sensitive layer; wherein,

the semiconducting gas sensor is provided in a sealable chamber;

the chamber is filled with the gas or gas mixture that is to be analyzed, and is sealed;

the gas-sensitive layer is held at a predetermined measuring temperature;

the measuring signal is examined when at lest one component of the gas has been exhausted via conversion within the chamber, to a point at which it no longer supplies any significant contribution to the measuring signal; and

a content of at least one remaining gas component is determined from the remaining measuring signal.

39. **(new)** The method in accordance with Claim 38, wherein:

the measuring signal is examined as a function of time; and

the measurement is used at least two different times to determine the gas components.

40. (new) The method in accordance with Claim 38, wherein the concentration of at least one gas component is determined from a maximum peak of the measuring signal and a subsequent drop thereof.

41. (new) The method in accordance with Claim 38, wherein the measuring temperature lies within a range of 20°C to 550°C.

42. (new) The method in accordance with Claim 38, wherein the measuring temperature lies within a range of 50°C to 400°C.

43. (new) The method in accordance with Claim 38, wherein the measuring temperature lies within a range of approximately 200°C and 400°C.

44. (new) The method in accordance with Claim 38, wherein:

heating is gradual; and

measurements are taken at different measuring temperatures.